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my own observations do not lead me to think that it was necessarily so. We know that the Indians lived strictly up to their belief, and if it had been an act of religion to thus bury articles, I maintain that in each and every grave some articles would be found. But, as I have pointed out, the single graves do not, in many cases, contain anything; and where the large ossuaries have been carefully examined, some of them have not contained a pipe or bead, while a single ossuary in close proximity might contain a thousand articles. Now, my theory is this, if one of these "feasts of the dead" should occur during a propitious season, many articles could be spared, but if a famine stared the Indians in the face, which frequently happened, they would be too poor to spare articles, and it appears to me that the act of burial was not one of religion but an act of respect.

The valuable paper by Mr. Wilson on jade articles, and the theory advanced by Professor Putnam that possibly the jade for making these objects came from China, is one worthy of close investigation, but must at present be referred to with much caution. That the aborigines traded over a vast extent of country is evidenced by the fact that we find southern shells, *pyrula perversa* and other such species, in our most northern graves, while in the South copper implements are found which show by their laminated structure that they are of aboriginal workmanship, and the material is identified as coming from Lake Superior from the large amount of silver it contains.

#### SPONGE TRADE OF THE BAHAMAS.

A RECENT report by United States Consul McLain of Nassau contains much interesting information about the sponge trade of the Bahama Islands. The vessels used in the sponge trade in those islands are small craft, varying in size from five to twenty-five tons burden, and are either schooner or sloop rigged. They are all built in local shipyards, and their construction and repairs constitute an important business in itself. The frames are generally made of Madeira wood, a hard, tough wood of native growth, the planking and other material being of yellow pine imported from the Southern States. Each vessel carries two or three small open row or scull boats, with a crew of from eight to twelve men. These vessels have an average life of from sixteen to twenty years, undergoing, of course, occasional repairs. It is thought that there are from four hundred and fifty to five hundred of these vessels.

The number of persons engaged in the business of gathering sponges in the Bahamas, handling them, and preparing them in various stages for market, is from five to six thousand, all of whom, except the shipowners, brokers, and shippers, are colored people. Hands employed in clipping, washing, packing, and preparing finally for shipment abroad, get from fifty to seventy five cents per day of ten hours. The amount earned by the men who go fishing for sponges cannot be given, as their pay depends entirely on the number of sponges obtained. The owner of the vessel fits her out at his own expense, and the profits of the voyage are divided up in shares among the owner, the master, and the men. They are never hired by the month, nor do they ever get specified wages. The most that can be said is that the men make a tolerable living, and the sponge fisherman who earns over three hundred dollars a year is the exception. The owners of the vessels, as a rule, have their own shops, from which the vessels are fitted out, and on supplies thus furnished the owner makes a profit in addition to others. The shipowners, generally speaking, find considerable profit in the business, whilst the fishermen, if not able to lay up any money from the pursuit, are yet enabled to rely upon it for a moderate living.

The method of gathering sponges is by means of iron hooks attached to long poles. By using a water-glass the fisherman can readily discover the sponges at the bottom, and then with his pole and hook he will bring up those he may select as fit for his purpose, leaving the smaller ones untouched. Some sponges adhere

firmly to the bed of the sea, while others are not attached at all, these latter being known as "rollers." About ten years ago an attempt was made to introduce dredges; but it was found that their use was likely to ruin the beds, because in passing over the bottom they dislodged and brought up not only the good sponges, but the young and unsalable ones as well, killing the spawn and working great mischief. The ordinary fishermen also made an outcry, declaring that the use of dredges interfered with their rights. An act was passed by the legislature forbidding the use of dredges, and only the pole and hook are now used.

When the sponge-field is reached the vessel anchors, and the men, putting off in the small open boats, do the fishing in the manner above indicated, returning to the vessel before nightfall with their catch. The sponges, when brought to the vessel, are at once spread upon the deck, and are left exposed to the sun for several days, during which time the animal matter that covers the sponge gradually dies. This is a black, gelatinous substance of a very low order of marine life, which during the process of decay emits a most objectionable odor. The vessels visit what is called the "kraal" once a week to land the load from the deck. The kraal is an inclosed pen, fenced in by sticks of wood so as to allow a free circulation of water through it, usually built in a sheltered and shallow bay or cove, on one of the cays near by. The sponges are placed in the kraal and left to be soaked and washed by the action of the water from four to six days, when they are taken out and beaten with sticks until the decayed covering is entirely removed. Having been subjected to this course of exposure, soaking, beating, and washing, the sponges are quite clean, and are taken on board the vessel, packed away in the hold, conveyed to Nassau, and in this condition are sold in the local market.

The average catch per trip cannot be stated, as the cargoes vary greatly in size and value. Of the larger sponges a catch of five thousand, or of the smaller ones seven thousand five hundred, would be considered a fair lot. Occasionally a cargo of from twelve to fifteen thousand large sponges has been brought in, but this success is exceptional. The vessels are provisioned and fitted out, as a rule, for a voyage of about six weeks, and generally from seven to eight voyages are made per annum.

There cannot be said to be any season for sponge-gathering, as it goes on all through the year. A number of vessels are often laid up, however, during August and September, the men being timid and afraid of hurricanes during that period. Of course the quieter the weather and smoother the sea, the better the chances are for making a good catch, as nearly all the work is done in small open boats from ten to twelve feet in length. Much also depends upon the energy and the industry of the crew, and there is luck in finding a locality where the sponges are valuable and abundant.

As to the length of time required for sponges to grow to good marketable size little definite can be said; none of the fishermen are able to tell, though many volunteer opinions that differ widely. It is a matter to be determined by future scientific investigation, but it is believed it will be found that a healthy sponge will reach a marketable size in from twelve to eighteen months under ordinary conditions of growth. No attempts have been made, worthy of mention, to cultivate the sponge in these waters.

The sponges are prepared for export in the following manner. After being bought in the local market they are carted to the shipping yard of the purchaser, where they are cut and trimmed into proper shapes and sizes; they are then washed and thoroughly dried, being generally spread in the sun for that purpose upon canvas or old sails; next they are assorted according to varieties and grades, and then packed by means of hand presses into bales weighing from twenty to a hundred and fifty pounds. Sometimes the sponges are bleached by being passed through a solution of white lime and water, so weak as not to injure the fibre of the sponge. The consul does not know of any process resorted to for coloring the sponges, and few, indeed, are even bleached at present.

When offered for sale in the local market, the sponges are either piled up loose or made into strands or beads of from two to ten sponges each. The best sponges are usually made into strings of from eight to ten sponges each, the price averaging about sixty

cents per string. Others are generally sold in lots not strung. The buyer, however, is not guided in his purchase by the number of sponges on a string, but by what a certain lot will weigh, and the weight is never given, but the buyer must estimate it. Hence practical experience is needed in the purchasing of the sponges.

Sponges are offered for sale on five days of the week at the sponge exchange. They are landed from the vessels, and each cargo is piled up by itself. The weight is entirely unknown. The buyers examine the lots, and each man hands in a private tender, in writing, for the lot, and it is awarded, on opening the tenders, to the highest bidder. A successful buyer must be able to judge correctly by his eye and experience just how many pounds of good sponges he will be able to get out of a given lot when it has been carefully worked up. Nearly all the sponges are bought by resident agents, who buy for New York, London, and Paris houses, shipping the goods to their principals. A few merchants handle sponges on their own account.

Along the southern coast of Florida the sponge business is in a flourishing condition, and has been for years, with its headquarters at Key West, and hundreds of the people of that vicinity are engaged all the time in gathering, curing, and shipping sponges. Many natives of the Bahamas visit Florida from time to time and find employment in the sponge business; though all the crews necessary to introduce the business on the Gulf coast of Florida, men well versed in the industry, can be obtained easily at Key West, without the least necessity of importing labor into the State from the Bahamas. It is said that the sponges growing along the Florida coast are much superior to the sponges of the Bahamas.

#### THE KHEVSURS OF THE CAUCASUS.

MONSIEUR V. DINGELSTEDT has published some notes on this singular people in *Le Globe* (tome xxx. No. 2), an abstract of which appears in the *Scottish Geographical Magazine* for September. The name is derived from the Georgian word *Khêvi*, signifying a mountain gorge, and is unknown among the people to whom it is applied. They call themselves after the different localities they inhabit not by any collective name. Their country is situated to the east of the Pass of the Cross, on both slopes of the central chain of the Caucasus, to the west and north-west of the mountain Bôrbalo, and has an area of about 570 square miles. Its mean altitude is over 6,500 feet, and it contains peaks rising above the limit of eternal snow, which, in the central part of the Caucasus, is at an elevation of 10,600 feet. About seven thousand persons inhabit this wild region, in a bleak climate, where the cultivable soil is of small extent and the vegetation poor.

In the summer the Khevsurs feed cattle and sheep on the rich grass which springs up on the mountain slopes, but in the winter forage is difficult to obtain, and the animals and their owners often succumb to famine. The Khevsurs, in contrast to the other mountaineers of the Caucasus, are plain in appearance, of rather short stature, and with large hands and feet, though they are muscular and agile. A great variety is observable in the color of their eyes and hair, their stature, and even in the form of their skulls, and this diversity may be ascribed to a mixture of race. Their original ancestors were probably Georgians, who, some time before the twelfth century, took refuge in the mountains. These were probably joined by men of other races, who, for various reasons were obliged to fly from their native lands, or were attracted by the life of brigandage which the Khevsurs led up to recent times. Their Georgian ancestors had reached a fairly high standard of civilization, but in their savage solitudes the Khevsurs have relapsed into semi-barbarism, and have now a fierce and defiant expression. They wear coats of mail, brassards, and helmets, like cavaliers of the Middle Ages. They live in communities consisting of one or several villages, under the nominal authority of a chief called a *Khevisberi*. These villages are grouped around some spot supposed to be sacred to a saint, and this religious bond has taken the place of the old tribal unity.

The Khevsurs have a vague belief in one God, but they never address him in prayer, and their rites consist in sacrifices and invocations to various saints, Christian and pagan, among which Saint George is held in high repute. Most of the work falls on

the women, while the men spend their time in idleness. Marriages are concluded either with Christian or pagan rites. The wife brings with her a dowry of cattle and a trousseau. The offspring of the cattle belong to the house of the husband, but the original herd is the private property of the wife, and any loss must be made good by the husband. The wife has no share in the property of her husband at his decease. It is divided among his male heirs, and, in default of these, goes to the community. So, too, the wife's property is divided among her sons, her trousseau only being left to her daughters.

Monogamy is the rule, but custom permits a man to repudiate his wife when she grows old, or if she bears no children, and to take another, provided that he gives an indemnity of five or six cows to the parents of the former. In other cases divorce is easily effected, but is seldom resorted to. The dead are buried in vast caves. They are dressed in coats of mail, and sometimes musical instruments are placed in their hands. Festivals are held in their honor five times, or, in the case of poor families, twice a year, when there is a lavish display of hospitality, and quarrels frequently take place.

#### NOTES AND NEWS.

In the last paragraph on page 192 of *Science* for Oct. 2, "An initial velocity of seven miles a second," should read, "An initial velocity of six miles a second."

— Amos E. Woodward, late assistant geologist on the Geological Survey of Missouri, died of pneumonia at Castle, Mont., in the last week of September. During his connection with the Missouri survey, Mr. Woodward's special subject was the mineral waters of the State, though he also conducted much other work in the laboratory. He was a painstaking, ambitious, and most industrious worker, and was held in high esteem by those who knew him.

— The flesh-colored, hydrated manganese sulphide which is obtained by the addition of ammonium sulphide to a solution of manganize chloride, on standing, or more rapidly on boiling with water, changes color to green. This green sulphide when washed and dried yields a powder of the same color, which is also unstable, being oxidized by mere exposure to air. It is, however, according to P. de Clermont and H. Guiot (*Mining and Engineering Journ.*), rendered permanent by removing its water of hydration, which is effected by heating it moderately in a current of hydrogen sulphide, carbon dioxide, or ammonia. Thus prepared it is suitable for application in paper staining, etc.

— Dr. L. Webster Fox is of opinion, says *Nature*, that savage races possess the perception of color to a greater degree than do civilized races. In a lecture lately delivered before the Franklin Institute, Philadelphia, he stated that he had just concluded an examination of 250 Indian children, of whom 100 were boys. Had he selected 100 white boys from various parts of the United States, he would have found at least five of them color-blind: among the Indian boys he did not discover a single case of color-blindness. Some years ago he examined 250 Indian boys, and found two color-blind, a very low percentage when compared with the whites. Among the Indian girls he did not find any. Considering that only two females in every 1,000 among whites are color-blind, he does not think it surprising that he did not find any examples among the Indian girls.

— Some time ago the Field Naturalists' Club of Victoria organized an excursion to the Kent group of islands, the object being to collect specimens, and to determine whether the group is most nearly related with Victoria, to which it is closest geographically, or with Tasmania. At the annual *conversazione* of the club, held recently, as we learn from *Nature*, Mr. C. A. Topp, the retiring president, referred to the results of the expedition. The bulk of the fauna and flora were found to be common to Victoria and Tasmania, but there were six or seven varieties of birds peculiar to Tasmania to two peculiar to Victoria. The conclusion was that the islands had been separated from Tasmania after that island was disjoined from the mainland. Among the plants, several